

REMARKS

The Office action dated November 29, 2004 is acknowledged. Claims 15-31 are pending in the instant application. According to the Office action, each of those claims has been rejected. By the present Office action reply, claims 15-22, 24 and 26-30 have been amended, claim 25 has been canceled and claim 32 has been added. Support for claim 32 can be found in the specification at paragraph 000026. No new matter has been added. Reconsideration is respectfully requested in light of the following remarks.

Rejection of Claims 15-31 under 35 U.S.C. § 112, second paragraph

The Examiner has rejected claims 15-31 under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which the applicant regards as the invention. The applicant will respond to each specific rejection set forth by the Examiner on pages 2-3 of the Office action below.

Claim 15: The Examiner states that claim 15 is indefinite because the expression “which can be an artificial material or a stony substance” does not comply with MPEP 2173.05(d), that there is no antecedent basis for “the agglutinated material” and because the claim lacks a “leaching” step. Claim 15 has been amended to correct these indefinite terms. Specifically, the first phrase has been amended to comply with correct Markush group structure. In addition, support for “a plastic material” can be found in the specification at paragraph 000026. The term “agglutinated” has been amended to read “agglomerated” with proper antecedent support provided for the term “the agglomerated material.” Lastly, the “leaching” step has been clarified in the claim.

Claim 16: The Examiner states that claim 16 is indefinite because there is no antecedent basis for the term “agglutination stage,” it is unclear as to what “calcium chloride solution” and “a second solution ...” are added and that there is a lack of antecedent basis for “the final agglutinate” and “base material.” The applicant submits that the first term has been deleted and that the claim has been amended to clarify as to what “calcium chloride solution” and “a second solution ...” are added (i.e., the mixture of rocky material and copper concentrate). Lastly, the terms “final agglutinate” have been amended to read “final mixture” and “rocky material,” respectively, each having proper antecedent support.

Claim 20: The Examiner states that claim 20 is indefinite because the term “type” is indefinite. This term has been deleted.

Claim 22: This claim is deemed indefinite for having improper Markush group terminology. The applicant submits that the Markush group has been amended accordingly.

Claim 24: The Examiner states that the claim is indefinite due to the inclusion of the term “copper species.” This term has been deleted.

Claim 25: The Examiner states that the claim is indefinite for having no antecedent basis for “the gravel pile.” The claim has been canceled.

Claim 26: The Examiner states that this claim is indefinite for also having no antecedent support for “the gravel pile” and that the terms “copper concentrates agglutinated” and “the pile” are unclear. Each of these terms has been deleted.

Claim 28: This claim has been deemed indefinite due to the meaning of the expression “intermediate solutions” being indefinite. The term has been deleted and clarified as being a mixture of pregnant and raffinate solutions.

Claim 30: The Examiner states that this claim is indefinite due to there not being any antecedent basis for “the washing solution.” The applicant submits that claim 26 has been amended to provide antecedent support for the term, and that claim 30 has been amended to clarify that raffinate solution is the washing solution.

In light of these amendments, the applicant respectfully submits that each of the rejections set forth by the Examiner under section 112 be withdrawn.

Rejection of Claims 15-31 under 35 U.S.C. 103(a)

Claims 15-31 have been rejected as being unpatentable over Chilean Patent No. 40,891. The Examiner points out that the ‘891 patent discloses a procedure to agglomerate fine crushed copper ores forming liquid permeability piles which, in view of the claimed procedure, is obvious since forming an agglomerate prior to leaching is obviously the crux of the claimed procedure.

Claims 15-31 have also been rejected as being unpatentable over U.S. Patent Applicant Publication No. 2003/0223927 (Russell, et al.) in view of U.S. Patent No. 5,527,382 (Pincheira Alvarez, et al.). The Examiner states that Russell, et al. discloses a method of agglomerating ore mixed with waste rock, whereas Pincheira Alvarez, et al. discloses a hydrometallurgical process for the treatment of copper bearing ores by a pile leaching process. The Examiner’s opinion is that it would have been obvious to one of ordinary skill in the art at the time the invention was made to leach the Russell, et al.

agglomerates in the form of a pile since copper is being recovered in both cases. The applicant respectfully disagrees with both of the Examiner's conclusions, as explained below.

The applicant first wishes to point out that the present invention pertains to the leaching of copper concentrates, which corresponds to the final product of the copper ore flotation stages, bonded or adhered to a support material which can be a rocky material or a plastic material, where the rocky material includes a rock and a depleted material. In some cases, it may be advantageous to use low grade copper ores, which are not profitable if they are treated separately.

To the contrary, the '891 patent refers to the leaching of copper ores. These are materials crushed and chemically agglomerated, to be later leached in stockpiles with solutions having the same autooxidizable characteristics, resulting from the reactions taking place in the agglomeration and resting stages. This stockpile is self-supporting, and is composed of the ore itself with a grain size distribution typical to the stockpile leaching. This provides suitable chemical and gas permeability for the process. The applicants respectfully point out that the '891 patent does not discuss or refer to the leaching of copper concentrates at all.

In this regard, the applicants respectfully submit that there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine the reference teachings (M.P.E.P. 706.02(g)). The applicants submit that such motivation is clearly lacking in the present case due to the Chilean reference and the

present invention pertaining to different types of procedures, namely, the leaching of copper ores and the leaching of copper concentrates, respectively. Moreover, even if one skilled in the relevant art were to modify the reference, assuming there was appropriate motivation, there would not be a reasonable expectation of success due to the differences set forth above.

In addition, the applicants respectfully note that, to date, bio-leaching is the only leaching process for copper concentrates in stockpiles. Therefore, claim 15 of the present application is new and non-obvious in that it is the only non-biochemical procedure known in the art which sets forth steps of leaching copper concentrates in stockpiles. In this regard, there has been a long felt and unmet need for such a procedure as the present invention. A process such as this is advantageous, for example, in plants producing concentrates and which also have stockpile leaching plants at the work site. The ores that are likely to be profitably leached generally exhaust before the sulfidized ores. It is also an advantageous process when the costs of transforming copper concentrates into high purity copper become very high due to the world's capability with the conventional treatment/process. In light of this, the applicants submit that claim 15, and the claims depending therefrom, are new and non-obvious.

With regard to the Examiner's second basis for an obviousness-type rejection, the applicants respectfully reiterate that the present invention refers to the treatment of copper flotation concentrates, which is the only chemical process presently known in the art for the heap leaching of concentrates. In this process, the addition of calcium chloride solutions and sulfuric acid during the agglomeration stage produces calcium sulfate or

gypsum which act as chemical bonding, unlike the Russell, et al. patent, which never treats copper concentrates. In the invention of the present application, the calcium chloride also incorporates chloride ions, which are the most important reactants in the leaching solutions acting as a complexing agent for copper and iron ions. In the case of Russell, et al., the process is confined to a vessel reactor which is more similar to vat leaching than heap leaching. Therefore, the permeability discussed therein refers to a flooded system or liquid permeability system, not gaseous permeability. For this reason, the applicants submit that the method and apparatus set forth in Russell, et al. are not suitable for treating sulfide minerals which need oxygen from the air for the leaching reactions.

The patent of Pincheira Alvarez, et al. relates only to oxide copper ores and, when combined with Russell, et al., fails to make up for any of the deficiencies therein. During its process, the ore is not agglomerated but rather has a stage of acid curing in order to sulfatize the oxides and subsequently separate the fine ore (not copper concentrate) to start the leaching of the coarse ore in a pile. This process does not relate to the present invention, which leaches copper concentrates obtained by the flotation of sulfide copper ores. As was the case with the previous rejection, there is no suggestion or motivation to combine these reference teachings. Moreover, even if such combination were done, there would be no reasonable expectation of success, nor would each and every limitation of the presently claimed invention be provided for. Therefore, a *prima facie* case of obviousness has not been established.

The applicants respectfully submit that since none of the cited prior art references, alone or in combination, teach or disclose each and every feature of the present invention as recited in the present claims, nor is there any motivation set forth in the cited references to modify them to obtain the present invention, the present invention is not obvious. Based on the foregoing arguments and deficiencies of the prior art references, it is respectfully submitted that the obviousness-type rejection be withdrawn.

Information Disclosure Statement

The Examiner states that only a copy of claim 1 of Chilean Patent No. 40,891 is in English and requests a translation of the full patent. The applicants wish to thank the Examiner for entering and considering the IDS submitted by the applicants. As requested by the Examiner, a translation of the entire Chilean Patent No. 40,891 is submitted herewith to facilitate the prosecution of the present application. The applicants invite the Examiner to contact the undersigned if any additional information is needed by the Examiner with regards to this reference, or any other reference of the IDS, in order to facilitate the prosecution of this application.

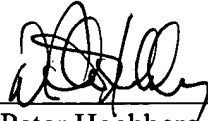
Conclusion

For the foregoing reasons, it is respectfully submitted that the present application is in condition for allowance, and such action is earnestly solicited. The Examiner is invited to call the undersigned if there are any remaining issues to be discussed which could expedite the prosecution of the present application.

Respectfully submitted,

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